Section 4.

Connection Procedures

“Information contained within this section shall be read in conjunction with all sections of this Installation Supply Connection Tests & Procedures manual”
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4.2 Principles of Testing & Connection of Electrical Installations

Introduction

The following principles apply to testing and connection work within the scope of these procedures. Connection work shall be undertaken in accordance with individual connection procedures to ensure the application of these principles.

Objective:

To ensure the safe connection of electrical installations to the Victorian Electricity Supply Network by:

- Providing correct polarity of electrical connections to the customer’s main switchboard.
- Providing a supply neutral of less than 1 Ω impedance to the customer’s main switchboard.
- Providing correct phase sequence to the customer’s main switchboard.
- Maintaining safe systems of work during the connection process.

Principles

1) All conductive components and associated work area assumed to be de-energised shall be proven de-energised by test, prior to the commencement of work.

2) Installation Under Test notice/s shall be placed at any point of which live apparatus is exposed to, or accessible by, other parties not involved in the connection process e.g. electricians, general public.

3) All neutral conductors/connections shall be readily identifiable by colour or termination position and tagged where required.

4) A Neutral Integrity Test Point (NITP) shall be established on the electrical installation to validate Check Testing and Neutral & Supply Testing Procedures.

5) Polarity Testing shall be conducted on the Supply/Service conductors where the supply neutral conductor has been disturbed, connected or disconnected and reconnected.

6) Supply Testing shall be conducted on the Supply/Service conductors where the service neutral conductor has been disturbed, connected or disconnected and reconnected.

7) Check Testing shall be conducted:
   - To ensure correct polarity of neutral connections to the main switchboard.
…… Check Testing cont.

- With switching circuits energised to ensure correct polarity of neutral connections on any occasion where the connection work has involved the installation of new metering equipment or alterations or additions to existing metering equipment.

8) A final Neutral and Supply Test shall be conducted to an established NITP.

9) Phase sequence shall be established:
   - On new installations to be correct to the metering equipment: and
   - On existing installations in a manner to ensure the correct operation of 3 phase equipment

10) Installation or changes to Metering equipment to be checked for correct functionality.
4.3 Supply Capacity Control Device/s - Installation configurations

Introduction

Supply Capacity Control Devices (SCCD) are a maximum demand device (circuit breaker) that will operate when the customers load exceeds the limit specified by the electrical Distributor.

The location of the device within the installation wiring may vary depending upon the wiring arrangements as depicted below.

Location 1  In the metered mains where they will assume the role of the customers main switch/s.
Location 2  Unmetered mains between the Service Protection Device (SPD) and the Metering Equipment.
Location 3  In the unmetered mains providing dual roles as the SCCD and SPD.

Connection Testing Procedure Variations where SCCD’s are fitted

To achieve the objective of ensuring correct polarity of electrical connections to the customer’s main switchboard the following shall be required:

Typical Arrangements

<table>
<thead>
<tr>
<th>Location 1</th>
<th>Location 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>No additional action required.</td>
<td>SCCD shall be maintained in the On/Closed position for any circumstances where work involves connection / disconnection or replacement of metering equipment e.g. new installations or metering alterations/additions.</td>
</tr>
</tbody>
</table>

Some situations exist but— now no longer permitted
Location 3

The SCCD shall be placed in the Off/Open position for Polarity and NST testing of incoming supply conductors where applicable.

Check Testing shall be performed by intermittently closing and opening the SCCD.
4.4 New Installation:-
Overhead Supply – Up to 100 amps

Preliminary Site Checks

1. Visually check for alternative supplies
2. Check supply availability.
3. Remove service fuse wedges

Meter Position

4. Test for de-energised.
5. Install “Installation Under Test” notice.
6. Check all main switches are “OFF”.
7. Identify consumer’s incoming mains and all metered conductors and tag incoming neutral conductor as appropriate.
8. Ensure incoming and outgoing neutrals are connected at neutral link.
9. Establish Neutral Integrity Test Point.
10. Install metering equipment – Refer to Distributor procedures.

Servicing – Consumers End

11. Erect service cable.
12. Identify and tag service neutral and identify consumer’s main neutral.
13. Identify and connect active service conductor/s to line side of fuse terminal/s.
14. Ensure service neutral is disconnected and made safe.

Servicing – Pole End

15. Erect Service Cable.
16. Visually identify service and supply neutral conductors, tag as appropriate and connect.
17. Identify and connect active service conductors to the appropriate active mains.

Servicing – Consumers End

18. Polarity Test service cable conductors.
19. NST Test service cable conductors.
20. Connect Service Neutral to Consumers Mains Neutral.
21. Check Test/s (includes switched circuits)
22. Leave service fuse/s inserted
23. NST Test to Neutral Integrity Test Point.

Meter Position

24. Phase Sequence Test (Three Phase Only)
25. Program meter/s and time switch (As applicable)
26. Load Test.
27. Equipment functionality test.
28. Check all connections and equipment.
29. Seal equipment in accordance with Distributor procedures.
30. Leave “On” or “OFF” in accordance with Distributor procedures.

* Refer to individual test procedures.
++ Refer to “Supply Capacity Control Device/s” (Sect 4.3) if fitted.
1) Visually check for alternative supplies
2) Check supply availability
3) Remove service fuse wedges
4) Test for de-energised.
5) Install “Installation Under Test” notice.
6) Check all main switches are “OFF”. ++
7) Identify consumer’s incoming mains and all metered conductors and tag incoming neutral conductor as appropriate
8) Ensure incoming and outgoing neutrals are connected at neutral link.
9) Establish Neutral Integrity Test Point. *
10) Install metering equipment
11) Erect service cable.
12) Identify and tag service neutral and identify consumer’s main neutral.
13) Identify and connect active service conductor/s to line side of fuse terminal/s.
14) Ensure service neutral is disconnected and made safe
15) Erect Service Cable.
16) Visually identify service and supply neutral conductors, tag as appropriate and connect.
17) Identify and connect active service conductors to the appropriate active mains.

18) Polarity Test service cable conductors.

19) NST test service cable conductors.

20) Connect Service Neutral to consumers Mains Neutral.
21) Check Test (includes switched circuits)*

22) Leave service fuse/s inserted

23) NST test to Neutral Integrity Test * **Point.

24) Phase Sequence Test * (3 Phase Only)

25) Program meter/s and time switch

26) Load Test. *

27) Equipment functionality test

28) Check all connections and equipment.

29) Seal equipment in accordance with Distributor procedures.

30) Leave “On” or “OFF” in accordance with Distributor procedures.
4.5 New Installation:-
Underground Supply – Supplied from a Pit

Preliminary Site Checks

1. Visually check for alternative supplies
2. Check for supply availability.
3. At the pit – test for de-energised consumer’s mains. *

Meter Position.

4. Test for de-energised. *
5. Ensure service fuse wedges and other meter panel fuse wedges are left out. ++
7. Check main switches are “OFF”.
8. Identify consumer’s incoming mains and all metered conductors.
9. Confirm connection of outgoing neutral is correct.
10. Identify the consumer’s incoming mains neutral and ensure it is disconnected and made safe.
11. Establish Neutral Integrity Test Point. *
12. Conduct Underground Consumers Mains Test. *
13. Install Metering Equipment.

Pit

14. Identify and tag consumer’s mains and supply neutral conductors and connect.
15. Identify and connect service active/s with appropriate mains active/s.

Meter position

16. Polarity Test all incoming consumers mains conductors. *
17. NST Test consumer’s mains incoming neutral. *
18. Connect consumer’s mains incoming neutral conductor.
19. Check Test/s. (includes switched circuits) *
20. Leave service fuse/s inserted.
21. NST Test to Neutral Integrity Test Point. *
22. Phase Sequence Test ( 3 Phase only ) *
23. Program meters and time switch.
24. Load tests *
25. Equipment functionality tests.
26. Check all connections and equipment.
27. Seal Equipment.
28. Leave ON or OFF in accordance with Distributors procedures.

* Refer to individual testing procedures.
Preliminary Site Checks
1) Visually check for alternative supplies
2) Check for supply availability.
3) At the pit – test for de-energised consumer’s mains.
4) Test for de-energised.
5) Ensure service fuse wedges and other meter panel fuse wedges are left out.
6) Install “Installation Under Test” notice/s.
7) Check main switches are “OFF”.

8) Identify consumer’s incoming mains and all metered conductors.
9) Confirm connection of outgoing neutral is correct.
10) Identify the consumer’s incoming mains neutral and ensure it is disconnected and made safe.

11) Establish Neutral Integrity Test Point.

12) Conduct Underground Consumers Mains Test.

13) Install Metering Equipment.
14) Identify and tag consumer’s mains and supply neutral conductors and connect.

15) Identify and connect service active/s with appropriate mains active/s.

16) Polarity Test all incoming consumers mains conductors.

17) NST test consumer’s mains incoming neutral.

18) Connect consumer’s mains incoming neutral conductor.

19) Check Test/s. (includes switched circuits)

20) Leave service fuse/s inserted.

21) NST test to Neutral Integrity Test Point.

22) Phase Sequence Test (3 Phase only)

23) Program meters and time switch.

24) Load tests

25) Equipment functionality tests

26) Check all connections and equipment

27) Seal Equipment

28) Leave ON or OFF in accordance with Distributor procedures
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4.6 New Installation:-
Underground Supply- Single Occupancy greater than 100 amps from a Supply Facility.

Introduction: This procedure has been developed for circumstances where it is impractical to disconnect the service neutral due to conductor size and termination position at the installation switchboard for the purpose of polarity and NST testing. The performance of this connection procedure shall only be undertaken by persons authorised by the relevant network operator.

Preliminary Site Checks

1. Visually check for alternative supplies.
2. Test work area for de-energised.*
3. Check supply availability.
4. Install installation under test notice/s

Supply End

5. Ensure service circuit breaker/fuses are in the open position.

Meter Position/Switchboard

6. Ensure Main Switch/s are in the off/open position.
7. Ensure metering, CT equipment and associated wiring is completed as appropriate.
8. Remove voltage fuses from CT chamber.
9. Conduct Underground Consumers Mains Test.* (Note: Correct neutral insulation resistance to earth will not be obtainable due to connection of installations earthing system at MEN point).

Switchboard & Supply End

10. Ensure service neutral conductor is connected to MEN point.
11. Test service neutral continuity between the supply connection facility and the MEN point to be less than 0.5Ω.* (Note: Test shall be conducted using trailing leads to confirm identification neutral conductor.)

Note: Testing for de-energised shall be simultaneously undertaken to the MEN point during the performance of steps 13 to 15 of this connection procedure.

12. Identify and NST Test supply facility conductors/connections.*
13. Visually identify mark/tag supply neutral and service neutral conductors and connect.
14. Visually identify and connect service actives to load side of service fuses/circuit breaker.
15. Close service fuses/circuit breaker.

Switchboard

16. NST Test MEN Point.*
17. Phase sequence Test.*

Meter Position

18. Re install voltage fuses at CT chamber.
19. Leave On or Off in accordance with distributors requirements.

* Refer to individual test procedures
4.7 **New Installation:-**
**Unmetered Supply- Not associated with Multiple Occupancies**

**Preliminary Site Checks**

1. Visually check for alternative supplies.
2. Check for supply availability.
3. Remove service fuse/s (Where Applicable)

**Consumers End - Switchboard**

4. Test for de-energised. *
5. Install “Installation Under Test” notice.
6. Ensure consumers main switch/s are “OFF”
7. Identify incoming active and neutral supply conductors
8. Disconnect incoming neutral and make safe.
9. Conduct Underground Consumers Mains Test (As Applicable)*

**Supply End**

10. Visually identify supply neutral conductors, tag as appropriate and connect.
11. Visually identify supply active conductors and connect.
12. Energise consumer’s mains
13. Consumers End - Switchboard
14. Polarity Test *
15. NST Test incoming neutral. *
16. Connect incoming neutral to MEN bar
17. NST Test to MEN bar.*
18. Phase sequence Test (3 phase only)
19. Check all connections and equipment.
20. Leave “On” or “Off” in accordance with Distributors procedures.

* Refer to individual testing procedures.
## Unmetered supply- Not associated with Multiple Occupancies

**Typical Arrangement**

<table>
<thead>
<tr>
<th>Preliminary Site Checks</th>
<th>Consumers End - Switchboard</th>
<th>Consumers End – Switchboard</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Visually check for alternative supplies.</td>
<td>4) Test for de-energised. *</td>
<td>9) Conduct Underground Consumers Mains Test. (As Applicable)*</td>
</tr>
<tr>
<td>2) Check for supply availability.</td>
<td>5) Install “Installation Under Test” notice.</td>
<td></td>
</tr>
<tr>
<td>3) Remove service fuse/s (Where Applicable)</td>
<td>6) Ensure consumers main switch/s are “OFF”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7) Identify incoming active and neutral supply conductors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8) Disconnect incoming neutral and make safe.</td>
<td></td>
</tr>
</tbody>
</table>

**Preliminary Site Checks**
- Visually check for alternative supplies.
- Check for supply availability.
- Remove service fuse/s (Where Applicable)

**Consumers End - Switchboard**
- Test for de-energised. *
- Install “Installation Under Test” notice.
- Ensure consumers main switch/s are “OFF”
- Identify incoming active and neutral supply conductors
- Disconnect incoming neutral and make safe.

**Consumers End – Switchboard**
- Conduct Underground Consumers Mains Test. (As Applicable)*
Supply End

10) Visually identify supply neutral conductors, tag as appropriate and connect.
11) Visually identify supply active conductors and connect.
12) Energise consumer’s mains

Consumers End – Switchboard

13) Polarity Test *
14) NST Test incoming neutral. *

Consumers End – Switchboard

15) Connect incoming neutral to MEN bar
16) NST test to MEN bar.*
17) Phase sequence test (3 phase only)
18) Check all connections and equipment.
19) Leave “On” or “Off” in accordance with Distributors procedures.
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4.8 New Installation:-
Multiple Occupancy - Direct Metered Occupancies

NOTES:

1) “Supply Point” is the first point where supply is available upstream of a Point to be connected. The Supply point will vary dependant upon the installation arrangement and include: Distributors Point of Supply [Substation terminals, pit, Fused Switch Disconnector (FSD) etc]; pillar; cubicle; main switch board; distribution switch board, common meter position

2) Unmetered and Metered Conductors: Conductors comprising the consumer’s mains, common consumer’s sub-mains and sub-mains to individual group metering positions are required to undergo pre energisation tests. The tests shall include, Insulation Resistance; Continuity and upon energisation; Polarity, Neutral Impedance (NST) and Phase Sequence (where applicable).

For individual occupancy consumer’s sub mains supplied from group metering positions, Insulation Resistance testing is only required to be conducted on active conductors. Lifting of individual occupancy neutrals at the group metering position is not permitted for the purpose of performing these tests.

UNMETERED SECTIONS:-

Preliminary Site Checks
1. Visually check for alternative supplies.
2. Check for supply availability.

Supply point
1. Test for de-energised.* ++
2. Install “Installation Under Test” notice.
3. Isolate all conductors that energise the Point to be connected.

Point to be connected
4. Test for de-energised.*
5. Install “Installation Under Test” notice.
6. Ensure all outgoing active conductors are isolated.
7. Identify incoming active and neutral supply conductors.
8. Disconnect incoming neutral and make safe.
9. Perform Insulation Resistance tests as applicable,
10. Conduct Continuity test as applicable,
11. Ensure Insulation and Continuity test results are acceptable.
12. Install Metering Equipment

Supply Point
13. Visually identify supply neutral conductor, tag as appropriate and connect.
14. Visually identify supply active conductors and connect.
15. Energise the Point to be connected.
Unmetered Sections……… continued

Point to be connected
16. Polarity Test incoming neutral.*
17. NST Test. incoming neutral. *
18. Reconnect incoming neutral.
19. NST Test to MEN/Neutral bar. *
20. Phase sequence Test (3 Phase only).*
21. Check all connections and equipment.
22. Leave “On” or “Off” in accordance with Distributors procedures.

* Refer to individual testing procedures
++ Refer to Appendix (section 5.3) should Independent Earth not be available

INDIVIDUAL OCCUPANCIES

Note 1 - Where there is a MEN at the individual occupancy switchboard, the procedure below does not apply. Refer to individual Distributor procedures.

Note 2 – The procedure below relates to group metering. Where occupancies are individually metered, refer to testing as outlined in procedure 4.5 for a single occupancy.

Preliminary Site Checks
1. Visually check for alternative supplies.
2. Check Supply Availability.

Supply Point
3. Test for de-energised. * ++
5. Ensure supply is isolated from occupancy sub mains and metering.

Occupancy Switch Board
6. Test for de-energised. * ++
8. Check Isolation switches "OFF”.
9. Identify incoming actives and neutral conductors.
10. Disconnect incoming neutral and make safe
11. Conduct Insulation Resistance test on active conductors as applicable,
12. Conduct Continuity test on active conductors as applicable,
13. Ensure Insulation and Continuity test results are acceptable.

Supply Point
14. Energise occupancy supply conductors.
Individual Occupancies ……continued

**Occupancy Switch board**

15. Polarity Test all incoming consumer’s mains conductors. * ++
16. NST Test consumer’s mains incoming neutral. * ++
17. Connect consumer’s mains incoming neutral conductor.
18. Conduct final NST to occupancy neutral bar
19. Phase Sequence Test (3 phase only). *
20. Program meters and time switch.
21. Load tests. *
22. Equipment functionality test.
23. Check all connections and equipment.
24. Seal equipment in accordance with Distributors procedures.
25. Leave “ON” or “OFF” in accordance with Distributors procedures.
26. Secure de-energised un-metered submains, meter panels and individual occupancy meters against unauthorised energisation by use of locks/seals / warning labels/dummy cartridges in accordance with Distributors procedures.

* Refer to individual testing procedures

++ Refer to Appendix (section 5.3) should Independent Earth not be available for tests
TYPICAL LAYOUTS FOR MULTIPLE OCCUPANCIES
- DIRECT METERED

Two or More Occupancies
Plus General Light & Power
Single (Common) Meter Position

Two or More Occupancies
Single (Common) Meter Position

Unmetered MSB

Unmetered Distribution Switchboard
Distribution Switchboard

Protective Device
Fuses in Take-off Box

Protective Device
Fuses in Take-off Box

High Rise
Multiple Meter Positions

The examples shown are typical only
and, of course, many variations of these
arrangements will be encountered

OSB Occupancy Switchboard
4.9 New Installation:-
Public Lighting Column or Scheme - Typical arrangement

Preliminary Site Checks

1. Visually check for alternative supplies.
2. Check for supply availability.
3. At the Supply End test lighting service conductors for de-energised*

Lighting Column End/s

4. Test for de-energised *
5. Install “Installation Under Test” notice.
6. Identify lighting incoming service conductors and lantern supply conductors.
7. Confirm MEN terminal block, earth stud and earth rod connections are complete (as applicable).
8. Ensure lantern fitting/s and associated wiring is complete.
9. Ensure incoming supply active is appropriately isolated.
10. Tag the incoming lighting service neutral and ensure incoming neutral is disconnected and made safe.
11. Conduct Underground Consumers Mains Test on the lighting service conductors. *

Supply End

12. Identify and tag lighting mains neutral and supply neutral conductors and connect.
13. Identify lighting mains active and supply active conductors and connect.

Lighting Column End

14. Polarity Test lighting service conductors. *
15. NST Test lighting service conductors. *
16. Connect service neutral to MEN terminal block.
17. Check Test to MEN terminal block. *
18. NST Test to MEN terminal block. *
19. NST Test to lantern column
20. Test lantern/s operation.
21. Check all connections and equipment
22. Close and secure lighting column cover.

* Refer to individual test procedures.
Public Lighting
Typical Arrangement

**Preliminary Site Checks**

1) Visually check for alternative supplies.
2) Check for supply availability
3) At the Supply End test lighting service conductors for de-energised*

**Lighting Column End/s**

4) Test for de-energised*
5) Install “Installation Under Test” notice.

**Lighting Column End/s**

6) Identify lighting incoming service conductors and lantern supply conductors.
7) Confirm MEN terminal block, earth stud and earth rod connections are complete (as applicable).

**Lighting Column End/s**

8) Ensure lantern fitting/s and associated wiring is complete.
9) Ensure incoming supply active is appropriately isolated.

**Lighting Column End/s**

10) Tag the incoming lighting service neutral and ensure incoming neutral is disconnected and made safe.
11) Conduct Underground Consumers Mains Test on the lighting service conductors.*

**Supply End**

12) Identify and tag lighting mains neutral and supply neutral conductors and connect.
13) Identify lighting mains active and supply active conductors and connect.
Lighting Column End/s
14) Polarity test lighting service conductors.
15) NST test lighting service conductors.*

Lighting Column End/s
16) Connect service neutral to MEN terminal block.
17) Check Test to MEN terminal block.*

Lighting Column End/s
18) NST test to MEN terminal block.*
19) NST test to lantern column.

Lighting Column End/s
20) Test lantern/s operation.
21) Check all connections and equipment.
22) Close and secure lighting column cover.
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4.10 New Installation:-
Frangible Public Lighting Columns - Typical arrangement slip
base frangible column demonstrated

Preliminary Site Checks

1. Visually check for alternative supplies.
2. Check for supply availability.
3. Test for de-energised.*

Lighting Column End

4. Test for de-energised.*
5. Install Installation Under Test notice.
6. Ensure pole installation, earthed neutral, earth electrode and associated lantern wiring is complete in accordance with Technical Standards.
7. Test continuity between the earthed neutral conductor at the pit and the column and ensure less than 0.5 Ω resistance.

Pit End

8. Test insulation resistance of lantern supply cables to earth

Pit End

9. Polarity Test the supply conductors.*
10. NST Test the supply conductors. *

Pit End

11. Identify and tag the 16 mm earthed neutral conductor from the column and the mains supply neutral conductor and connect

Lighting Column End

12. Test the pole for de-energised. *

Lighting Column End

13. Conduct NST Test on the pole/earthing system. *
    Note - Supply for the NST tester will be required to be taken from the pit for this test.

Pit End

14. Identify and tag the lantern supply and mains supply neutral conductors and connect.
15. Identify the lantern supply and mains supply active conductors, install fuse assembly and connect

Lighting Column End

16. Test the column for de-energised.*
17. Check the lantern/s operation.
18. Check all connections and equipment.

* Refer to individual test procedures
Frangible Public Lighting Columns
Typical arrangement slip base frangible column demonstrated

**Preliminary Site Checks**
1) Visually check for alternative supplies
2) Check for supply availability
3) Test for de-energised.*

**Lighting Column End**
4) Test for de-energised.*
5) Install Installation Under Test notice.
6) Ensure pole installation, earthed neutral, earth electrode and associated lantern wiring is complete in accordance with Technical Standards.

**Lighting Column End**
7) Test continuity between the earthed neutral conductor at the pit and the column and ensure less than 0.5 Ω resistance.

**Pit End**
8) Test insulation resistance of lantern supply cables to earth.*

**Pit End**
9) Polarity test the supply conductors.*
10) NST test the supply conductors.*

**Pit End**
11) Identify and tag the 16 mm earthed neutral conductor from the column and the mains supply neutral conductor and connect.
Installation Supply Connection Tests & Procedures

Lighting Column End
12) Test the pole for de-energised.*

Pole Earth Stud

Lighting Column End
13) Conduct NST test on the pole/earthing system * Note - Supply for the NST tester will be required to be taken from the pit for this test.

Pole Earth Rod

Pit End
14) Identify and tag the lantern supply and mains supply neutral conductors and connect.
15) Identify the lantern supply and mains supply active conductors, install fuse assembly and connect.

Lighting Column End
16) Test the column for de-energised.*
17) Check the lantern/s operation.
18) Check all connections and equipment.
19) Close and secure terminal covers.

Typical Wiring Arrangement
Frangible Pole

16mm Earthed/Neutral Conductor

Lantern Supply Conductors

Supply Cable Disconnect Plugs

Supply

Earth Stake

[Diagram of typical wiring arrangement]
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4.11 Existing Installation:- Replacement or Disconnection and Reconnection Overhead Service - Service Cable “On-supply”

Note: This procedure applies to the replacement or disconnection and reconnection of an existing overhead service which was on supply prior to the commencement of work.

Consumers End.

1. Test work area for de-energised*
2. Remove service fuse/s.
3. Identify existing active and neutral connections/conductors and tag consumer’s mains neutral as appropriate.
4. (3 Phase Only) Identify existing service cable phase sequence and mark sequence on corresponding consumers mains*
5. Test for de-energised, consumer’s mains. *

Pole End

6. Identify supply neutral and mark/tag.
7. Disconnect service active/s conductor/s.
8. Disconnect service neutral conductor and lower existing service.

Servicing – Consumers End

9. Remove existing service cable (if applicable)
10. Establish Neutral Integrity Test Point. * (++)
11. Erect new service cable (if applicable).
12. Visually identify and tag service neutral.
13. Identify and connect active service conductor/s to line side of fuse terminal/s.
14. Ensure service neutral is disconnected and made safe.

Servicing – Pole End

15. Raise service cable.
16. Visually identify service and supply neutral conductors, tag as appropriate and connect.
17. Identify and connect active service conductors to the appropriate active mains.

Servicing – Consumers End

18. Polarity Test service cable conductors.*
19. NST Test service cable conductors.*
20. Connect Service Neutral to Consumers Mains Neutral.
21. Ensure phase sequence corresponds with phase sequence prior to disconnection. *
22. Check Test.*
23. Leave service fuse/s inserted.
24. NST to Neutral Integrity Test Point. *

* Refer to individual test procedures
++ Where NITP is not accessible, refer to alternative test arrangements in diagrams at step 10
Replacement or Disconnection and Reconnection Overhead Service  
Service cable “On Supply”

1) Test work area for de-energised.
2) Remove service fuse/s.
3) Identify existing active and neutral connections/conductors and tag consumer’s mains neutral.
4) (3 Phase Only) Identify existing phase sequence.
5) Test for de-energised, consumer’s mains.

++ ALTERNATIVE TEST WHERE NITP NOT ACCESSIBLE

This variation is only permitted for service replacement procedures where the service protection device is at the load end.

Where the 3 normal NITPs are inaccessible in replacement overhead procedures (service protection device – load end), the connector may substitute the NITP test with a continuity test between the point of supply and the outgoing neutral at the customers metering position as demonstrated below. The maximum allowable test result is 0.5 ohm.

Neutral Link on Meter panel/board OR Outgoing Neutral on a ANNA connected Meter

After establishing suitable continuity the outgoing neutral at the meter position may be used in substitution of the NITP for the purpose of this procedure.
11) Erect new service cable if applicable.
12) Visually identify and tag service neutral.
13) Identify and connect active service conductor/s to line side of fuse terminal/s.
14) Ensure service neutral is disconnected and made safe.

15) Raise service cable.
16) Visually identify service and supply neutral conductors, tag as appropriate and connect.
17) Identify and connect active service conductors to the appropriate active mains.

18) Polarity Test service cable conductors.*
19) NST service cable conductors.*

20) Connect Service Neutral to Consumers Mains Neutral.
21) Ensure phase sequence corresponds with phase sequence prior to disconnection.*
22) Check Test.*
23) Leave service fuse/s inserted.
24) NST to Neutral Integrity Test Point.*
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4.12 **Existing Installation:- Replacement Overhead Service cable - Service Cable “Disconnected”**

**NOTE:** This procedure applies when replacing any service cable which was has been physically disconnected or broken at any point prior to the commencement of works, ie under fault conditions (wire down).

**Pole End**

1. Identify supply neutral and mark/tag.
2. Disconnect service active conductor/s.
3. Disconnect service neutral conductor and remove existing service.

**Consumers End**

4. Test work area for de-energised. *
5. Remove the service fuse/s.
6. Test for de-energised, consumer’s mains. *
7. Visually identify active and neutral connections/conductors and tag consumer’s mains neutral as appropriate.
8. Disconnect service active/s and neutral and remove existing service.
9. Establish Neutral Integrity Test Point. * ++
10. Check all main switches are “Off”, ( 3 phase only)

**Servicing Consumers End**

11. Erect replacement service cable.
12. Visually identify and tag service neutral.
13. Identify and connect active service conductor/s to line side fuse terminals.
14. Ensure service neutral is disconnected and made safe.

**Servicing – Pole End**

15. Erect service cable.
16. Visually identify service and supply neutral conductors, tag as appropriate and connect.
17. Identify and connect active service conductor/s to the appropriate active mains.

**Consumers End**

18. Polarity Test service cable conductors. *
19. NST Test service cable conductors. *
20. Connect Service Neutral to Consumer’s Mains Neutral.
21. Check Test *
22. Leave service fuse/s inserted.
23. Ensure original phase sequence returned. (3 phase only) *
24. NST to Neutral Integrity Test Point. *
25. Leave “On” or “Off” in accordance with Distributors Procedures

* Refer to individual test procedures.
++ Where NITP is not accessible, refer to alternative test arrangements -diagrams at step 9
Replacement overhead service cable: – Service cable- “Disconnected”

1) Identify the supply neutral and mark/tag.
2) Disconnect service active conductor/s
3) Disconnect the service neutral conductor and remove existing service.
4) Test the work area for de-energised.*
5) Remove the service fuse/s
6) Test for de-energised, consumers mains.*
7) Visually identify active and neutral connections/conductors and tag consumer’s mains neutral as appropriate.
8) Disconnect service active and neutral conductors and remove existing service.
9) Establish Neutral Integrity Test Point.* ++
10) Check all main switches are “Off” (3 ph only.)

++ ALTERNATIVE TEST WHERE NITP NOT ACCESSIBLE

This variation is only permitted for service replacement procedures where the service protection device is at the load end.
Where the 3 normal NITPs are inaccessible in replacement overhead service procedures (service protection device- load end), the connector may substitute the NITP test with a test of continuity between the point of supply and the outgoing neutral at the customers metering position as demonstrated below. The maximum allowable test result is 0.5 ohm.

Neutral Link on Meter panel/board OR Outgoing Neutral on a ANNA connected Meter

After establishing suitable continuity the outgoing neutral at the meter position may be used in substitution of the NITP for the purpose of this procedure.
11) Erect replacement service cable.
12) Visually identify and tag service neutral.
13) Identify and connect active service conductor/s to line side fuse terminals.
14) Ensure service neutral is disconnected and made safe.
15) Erect service cable.
16) Visually identify service and supply neutral conductors, tag as appropriate and connect.
17) Identify and connect active service conductor/s to the appropriate active mains.
18) Polarity Test service cable conductors.*
19) NST test service cable conductors.*
20) Connect service neutral to consumer's main neutral.
21) Check Test.*
22) Leave service fuse/s inserted.
23) Ensure original phase sequence returned
24) NST to Neutral Integrity Test Point.*
25) Leave “On” or “Off” in accordance with Distributors procedures.
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4.13 Existing Installation:- Overhead Service Replacement
Service Protection Device - Pole End

In these situations, the preferred option is to remove the service protection device from the pole end and install a FOLCB upstream of the consumers terminals at the POA and undertake service replacement as per VESI testing procedure 4.11 (service replacement on supply) or 4.12 (service replacement supply disconnected) as applicable.

Where this is not possible, refer to the procedure below.

**Meter Position/Main Switchboard**

1. Test work area for de-energised *
2. Install "Installation Under Test" notice.
3. Identify and tag as appropriate incoming neutral conductor at MEN terminals.
4. Identify existing phase sequence.*
5. Ensure all incoming active conductors are appropriately isolated from installation (Open Supply Main Switch/Remove Fuse/s.)

**Point of Attachment**

6. Test work area for de-energised.*
7. Identify existing phase sequence POA and mark sequence on the corresponding consumer’s mains.*
8. Identify service active/s and neutral conductor’s POA and mark/tag installation neutral as appropriate.

**Pole End**

9. Identify mains neutral and mark/tag if not previously done.
10. Open service protection device/s e.g. fuse/s.
11. Disconnect service active conductors.
12. Disconnect service neutral conductors and remove existing service.

**Meter Position/Main Switchboard**

13. Test for De-energised *
14. Ensure incoming neutral is disconnected from MEN terminals and made safe.

**Point of Attachment**

15. Erect new service
16. Ensure service neutral is identified and connect to installation neutral.
17. Identify service active conductors and connect to installation active.

**Servicing - Pole End**

18. Erect service cable.
19. Identify service neutral, mark/tag as appropriate and connect to supply neutral.
20. Identify service active conductors and connect to the appropriate supply actives.
Existing Installation:- Overhead Service Replacement Service Protection Device - Pole End

Meter Position/Main Switchboard

22. Polarity Test incoming supply conductors.*
23. NST Test incoming supply conductors.*
24. Connect supply neutral to MEN.
25. NST Test to MEN terminal bar. *
26. Phase sequence Test.*
27. Leave “On” or “Off” in accordance with Distributors procedures.

* Refer to individual test procedures
NOTE: Access and configuration variables may require reference to Distributors procedures to complete appropriate tests/checks.

### Service Protection Device – Pole End

1. Test work area for de-energised *
2. Install “Installation Under Test” notice.
3. Identify and tag incoming neutral conductor at MEN terminals.

### Meter Position/Main Switchboard

4. Identify existing phase sequence.*
5. Ensure all incoming active conductors are appropriately isolated from installation (Open Supply Main Switch/Remove Fuse/s.)

*(Open main switch demonstrated)*
**Point of Attachment**

6) Test work area for de-energised.*

7) Identify existing phase sequence POA and mark sequence on the corresponding consumer’s mains.*

8) Identify service active/s and neutral conductor’s POA and mark/tag installation neutral if not previously done.

**Pole End**

9) Identify mains neutral and mark/tag if not previously done.

10) Open service protection device/s e.g. fuse/s.

11) Disconnect service active conductors.

12) Disconnect service neutral conductors and remove existing service.

**Meter Position/Main Switchboard**

13) Test for De-energised*

14) Ensure incoming neutral is disconnected from MEN terminals and made safe.
Connection Procedures

**Point of Attachment**
15) Erect new service
16) Ensure service neutral is identified and connect to installation neutral.
17) Identify service active conductors and connect to installation active.

**Servicing - Pole End**
18) Erect service cable.
19) Identify service neutral, mark/tag as appropriate and connect to supply neutral.
20) Identify service active conductors and connect to the appropriate supply actives.
21) Energise service conductors.

**Meter Position/Main Switchboard**
22) Polarity Test incoming supply conductors.*
Existing installation: Replacement OH service
Service Protection Device – Pole End

### Installation Supply Connection Tests & Procedures

**Existing installation: Replacement OH service**

**Service Protection Device – Pole End**

**Meter Position/Main Switchboard**

23) NST test incoming supply conductors.*

24) Connect supply neutral to MEN
25) NST to MEN terminal bar*
26) Phase sequence test.*
27) Leave “On” or “Off” in accordance with Distributors Procedures.

**NOTE:** Access and configuration variables may require reference to Distributors procedures to complete appropriate tests/checks.
4.14 Existing Installation:- Single Occupancy

Meter Alteration and/or Additions – Direct Metering

1. Test the work area for de-energised. *
2. Visually confirm NITP availability.
3. Install “Installation Under Test” notice/s.
4. Establish existing phase sequence (3 phase only) *
5. Identify and mark/tag all conductors as appropriate.
6. Remove the service/supply & time switch fuse/s (As applicable)
7. Test for de-energised metering conductors & equipment. *
8. Remove meter/s and/or metering equipment and re-test conductors for de-energised (As applicable) *
9. Carry out metering alteration/addition
10. Ensure all supply and outgoing conductors are correctly connected
11. Establish Neutral Integrity Test Point.*
12. Perform Check Test/s. (includes switched circuits) *
13. Leave service/supply fuse/s inserted.
14. NST to Neutral Integrity Test Point. *
15. Confirm original phase sequence (3 phase only).*
16. Load test/s. *
17. Equipment functionality tests.
18. Check all connections and equipment.
19. Seal Equipment.
20. Leave “On” or “Off” in accordance with Distributors procedures.

* Refer to individual testing procedures
Single Occupancy:- Meter Alteration and/or Additions – direct metering

Typical Arrangement

1) Test the work area for de-energised*
2) Confirm NITP availability*
3) Install "Installation Under Test" notice.
4) Establish existing phase sequence (3 ph only)*
5) Identify and mark/tag all conductors as appropriate.
6) Remove the service/supply and time switch fuse/s (As applicable)*
7) Test for de-energised, metering equipment.*
8) Remove meter/s and/or metering equipment and re-test conductors for de-energised (As applicable)*
9) Carry out metering alteration/addition
10) Ensure all supply and outgoing conductors are correctly connected
11) Establish NITP* -
12) Perform Check Test/s (includes switched circuits)*
13) Leave service/supply fuse/s inserted.
14) NST to NITP*

15) Confirm original Phase sequence (3 ph only).*
16) Load Tests.*
17) Equipment functionality tests.
18) Check all connections and equipment.
19) Seal equipment
20) Leave “On” or “Off” in accordance with Distributors procedures.
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4.14A Existing Installation: Multiple Occupancy (MO)

Alteration and/or Addition Direct Metering

Main or Occupancy Neutral Not Disturbed  (see definitions)

This procedure shall be used for MO configurations where the metering is supplied by a single metering neutral conductor and the main neutral conductors are “not disturbed” as per the definition.

1. Test the work area for de-energised. * ++
2. Install "Installation Under Test" notice/s.
3. Confirm single metering neutral conductor
4. Visually confirm MEN connection point or neutral bar/link at remote meter board as the NITP.*
5. Establish existing phase sequence (3 phase only). *
6. Identify and mark/tag all conductors as appropriate.
7. Remove the service/supply and time switch fuse/s (As applicable).
8. Test for de-energised metering conductors & equipment. * ++
9. Remove meter/s and/or metering equipment and re-test conductors for de-energised (As applicable)*
10. Carry out metering alteration/addition.
11. Ensure all supply and outgoing conductors are correctly connected.
12. Perform Check Test/s (includes switched circuits) * ++
13. Leave service/supply fuse/s inserted.
14. NST to Neutral Integrity Test Point * ++
15. Confirm original phase sequence. (3 phase only).*
16. Load test. *
17. Equipment functionality tests.
18. Check all connections and equipment.
19. Seal Equipment.
20. Leave “On” or “Off” in accordance with the Distributors procedures.

* Refer to individual test procedures and the following diagrams

++ Refer to appendix (section 5.3) should independent earth not be available for tests
**Existing Installation: Multiple Occupancy – Meter Alteration and/or Addition Direct Metering  Main or Occupancy Neutral Not Disturbed**

<table>
<thead>
<tr>
<th>Typical Arrangements</th>
<th>Meter and occupancy neutrals terminated in links at meter position.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Metering is supplied by single metering neutral conductor.</td>
</tr>
<tr>
<td></td>
<td>- Main earth terminated /connected at Meter board supply Neutral Link.(MEN)</td>
</tr>
<tr>
<td></td>
<td>This MEN link is a valid NITP without further test.</td>
</tr>
<tr>
<td></td>
<td>A Neutral bar/link at a meter board remote to the MEN link is also a valid NITP without further test</td>
</tr>
<tr>
<td></td>
<td>Supply neutral terminated at main switchboard</td>
</tr>
<tr>
<td></td>
<td>- Metering is supplied by single metering neutral conductor.</td>
</tr>
<tr>
<td></td>
<td>- Main earth terminated /connected at MEN bar on main switchboard</td>
</tr>
<tr>
<td></td>
<td>This MEN link is a valid NITP without further test.</td>
</tr>
<tr>
<td></td>
<td>A Neutral bar/link at a meter board remote to the MEN link is also a valid NITP without further test</td>
</tr>
</tbody>
</table>

**Existing installation: Multiple Occupancy**

**Meter Alteration and/or Additions – Direct Metering**

**Neutral Not Disturbed**

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4.14B Existing Installation: Multiple Occupancy (MO) Alteration and/or Additions Direct Metering Main or Occupancy Neutral Disturbed (see definitions)

This procedure shall be used for MO configurations where the occupancy neutral continues through the meter and/or the main neutral conductors are “disturbed” as per the definition AND an independent earth can be established at the occupancy S/board

At Occupancy
1. Confirm access to switchboard & turn off main switch/s.
2. Visually confirm at switchboard.
   - No MEN ++ - proceed to step 3 or
   - MEN - confirm an independent earth can be established - proceed to step 3 or
   - Where an independent earth cannot be established – DO NOT CONTINUE
     (Refer to relevant Distributor's procedures and NOTE below)
3. Install “Installation Under Test” notice.
4. Establish existing phase sequence (3 phase only). *

At Meter Position
5. Test the work area for de-energised. * ++
7. Identify and mark/tag all conductors as appropriate.
8. Remove the service/supply and time switch fuse/s (As applicable).
9. Test for de-energised metering conductors & equipment. * ++
10. Remove meter/s and/or metering equipment and re-test conductors for de-energised (As applicable). *
11. Install bridge between load active & load neutral at meter position,

At Occupancy
12. Test for de energised *
13. Conduct continuity test between active & neutral
   Resistance of 0.5 ohm or less validates occupancy switchboard neutral bar as the NITP.

At Meter Position
14. Remove bridge and carry out metering alteration/addition.
15. Ensure all supply and outgoing conductors are correctly connected.

At Occupancy
16. Perform Check Test/s to occupancy neutral bar (includes switched circuits). *++
17. Leave Service /supply fuse/s inserted.
18. Conduct final NST test to occupancy neutral bar. *++
19. Confirm original phase sequence (3 phase only). *
20. Restore occupancy main switch as found.
Existing Installation: Multiple Occupancy (MO) Alteration and/or Additions Direct Metering Main or Occupancy Neutral Disturbed……...cont

At Meter position
21. Load test /s.*
22. Equipment functionality tests.
23. Check all connections and equipment.
24. Seal equipment.
25. Leave “On” or “Off” in accordance with the Distributors procedures.

* Refer to individual test procedures and the following diagrams

++ Refer to appendix (section 5.3) should independent earth not be available for tests

NOTE: Where a Multiple Occupancy installation exists with the MEN connected at the occupancy S/board and an independent earth is not available, the procedure in 5.3 does not apply. These situations will require attendance of appropriately trained/authorised/approved personnel to conduct the testing and connection of affected occupancy/s using relevant Distributor procedures.
## Existing installation Multiple Occupancy:- Alteration and/or Addition Direct Metering

### Main or Occupancy Neutral Disturbed

#### Typical Arrangements

<table>
<thead>
<tr>
<th>Occ 1 S/board</th>
<th>Occ 2 S/board</th>
<th>Occ 3 S/Bd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply N</td>
<td>Supply Active</td>
<td>Supply Active</td>
</tr>
<tr>
<td>Occupancy</td>
<td>Neutral &amp;</td>
<td>Neutral &amp;</td>
</tr>
<tr>
<td>Switchboard</td>
<td>Earth Bars</td>
<td>Earth Bars</td>
</tr>
</tbody>
</table>

**Installation connected earthing system**

**Continuity test Active & neutral at OSB to establish NITP**

**Supply disconnect device**

**Where an independent earth cannot be established – DO NOT CONTINUE and refer to relevant Distributor’s procedures.**

### Occupancy Switchboard, Neutral & Earth Bars separated:-

Install bridge between load active & load neutral at Meter position.

Conduct continuity test between active and neutral at occupancy switchboard. Resistance of 0.5 ohm or less validates occupancy switchboard neutral bar as the NITP.

**MEN at Occupancy Switchboard**

Confirm an independent earth can be established-

Install bridge between load active & load neutral at meter position

Conduct continuity test between active and neutral at occupancy switchboard. Resistance of 0.5 ohm or less validates occupancy switchboard neutral bar as the NITP

**NOTE:-** If an independent earth cannot be established, the MEN/earthing system cannot be used as an independent earth.

Where an independent earth cannot be established – DO NOT CONTINUE and refer to relevant Distributor’s procedures.
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4.15 Existing installations: -
Alterations and/or Additions - CT Metering

All works conducted on CT metered equipment shall be in accordance with relevant clause of the
Green Book - Code of Practice on Electrical Safety for the Distribution Businesses in the Victorian
Electricity Supply Industry.

When conducting works on CT Meter Panels the worker shall consider the wiring arrangement of
the particular installation and where appropriate, supplement this procedure with additional
practices as required within the Code.

Testing and configuration variables will require reference to individual Distributor and meter
provider procedures.

1. Test work area for de-energised.*
2. Install “Installation Under Test” notice.
3. Identify current, voltage and any switching active and neutral conductors and mark as
   appropriate.
4. Establish existing phase sequence.*
5. Isolate the voltage/potential circuits from the meter by removing the fuses ++
6. Test for de-energised*
7. Insert ‘shorting’ plugs into the current circuit of the meter test block. (All Phases)
8. Open the current links of the meter test block (All Phases)
10. Check all connections.
11. Conduct specialist-metering checks/tests in accordance with individual Distributor and
    meter provider requirements.
12. Check correct Voltage and Current phase relationships, for each phase as per individual
    Distributor and meter provider requirements.
13. Close the current links at the meter test block (All phases).
14. Remove the ‘shorting’ plugs from the current circuit of the meter test block (All phases).
15. Restore voltage/potential supply to meter by inserting fuses. ++
16. Conduct specialist-metering checks/tests in accordance with individual Distributor and
    meter provider requirements.
17. Confirm original phase sequence.*
18. Equipment functionality checks.
19. Seal metering and associated equipment.

* Refer to individual test procedures.
++ Refer to individual Distributor procedures where there are no fuses on the panel.
Alteration and /or Additions- CT metering

Typical arrangement

1. Test work area for De-energised
2. Install "Installation Under Test" notice

DANGER
DO NOT TOUCH
INSTALLATION UNDER TEST

Existing installation: Alteration and /or Additions – CT Metering

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Alteration and /or Additions - CT metering

Typical arrangement

3. Identify current, voltage and change over active and neutral conductors and mark as appropriate
4. Establish existing phase sequence*
Alteration and/or Additions - CT metering

Typical arrangement

5. Isolate the voltage/potential circuits from the meter by removing the fuses.
6. Test metering, conductors and equipment for de-energised.

DO NOT TOUCH INSTALLATION UNDER TEST

FUSES REMOVED

CURRENT LINKS CLOSED

Existing installation: Alteration and/or Additions – CT Metering

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Alteration and/or Additions - CT metering

Typical arrangement

7. Insert shorting plugs into the current circuit of the meter test block (All Phases)
8. Open the current links of the meter test block (All Phases)
9. Conduct Metering Replacement / Alterations
10. Check all connections
Alteration and /or Additions - CT metering

Typical arrangement

11. Conduct specialist-metering checks in accordance with individual Distributor and meter provider requirements.

12. Check correct Voltage and Current phase relationships for each phase as per individual Distributor and meter provider requirements.
Alteration and /or Additions - CT metering

Typical arrangement

13. Close the current links at the meter test block (All Phases)
14. Remove the “Shorting” plugs from the Current circuit of the meter test block (All Phases)
15. Restore voltage/potential supply to meters by inserting fuses
Alteration and/or Additions - CT metering

Typical arrangement

16. Undertake final specialist-metering checks/tests in accordance with individual Distributor and meter provider requirements
17. Confirm original phase sequence
18. Conduct equipment functionality checks

DO NOT TOUCH
INSTALLATION UNDER TEST

Existing installation: Alteration and/or Additions – CT Metering

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Alteration and/or Additions - CT metering

Typical arrangement

19. Seal metering and associated equipment
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4.16 Existing Installation:—
Abolishment of Electricity Supply

Objective

To make certain of the appropriate supply abolishment at an installation or occupancy within an installation by:

a) Removal of OH service cables; or
b) Termination of UG service cables; or
c) Disconnection by an REC of customers supply cables; and
d) Ensuring the supply point and all disconnected conductors are left in safe condition, and the metering and supply conductors cannot be inadvertently energised.
e) Ensure continuity of all neutrals to remaining installations/occupancies

The following procedure will achieve the objective for the majority of abolishments. Adjustments must be made by the person responsible for the abolishment to meet the above objective where it is not covered by the procedure.

Installation/Occupancy

1. Test for de-energised where appropriate*
2. Identify correct site location – meter number
3. Confirm abolishment requirement if possible (optional)
4. Identify if installation wiring work is required – If it is, do not proceed until appropriate arrangements are made by the customer’s agent (REC)
5. Install Installation under test notice
6. Switch off main switches (optional)
7. Remove SPD/SDD as appropriate

Supply End

8. Identify service cable conductors or consumer mains conductors to be disconnected
9. Disconnect and remove active then neutral conductors from supply points
10. Ensure supply points are left in a safe condition

As applicable:

- Check that only conductors intended to be disconnected are disconnected
- Remove overhead service cable
- Remove underground service cable or ensure cable/s are correctly identified by continuity test, insulated and terminated.

Installation/Occupancy

11. Test for de-energised*
12. Remove metering and Distributor’s supply assets
13. Ensure metering and supply conductors cannot be inadvertently energised or reconnected, and that the above objectives have been met.

NOTES:
- Should further work be required by customer/REC – Defect notice may need to be issued

* Refer to individual test procedures
Typical Abolishment - Overhead Supply

**Installation/Occupancy**
1. Test for de-energised.
2. Identify correct site location.
3. Confirm abolition requirement if possible.
4. Identify if installation wiring work required by customer/REC to complete abolition (eg disconnect POEL conductors/wiring).
5. Install Installation Under Test notice.
6. Switch off main switches.
7. Remove SPD/SDD as appropriate.

**Supply End**
8. Identify service cable conductors or consumer’s mains conductors to be disconnected.
9. Disconnect service conductors from supply point.
10. Ensure supply points are left in a safe condition.

**As applicable:**
- Check that only the conductors intended to be disconnected are disconnected.
- Remove the overhead service cable.

**Installation/Occupancy**
11. Test for de-energised.

**Installation/Occupancy**
12. Remove metering and Distributor’s supply assets.
13. Ensure meter panel wiring and supply conductors to be left in a safe condition.

**NOTE** – Should further work be required by customer/REC – Defect notice may need to be issued.
**Typical Abolishment - Underground Supply**

**Preliminary Site Checks**
1) Test the work area for de-energised*
2) Identify correct site location – meter number.
3) Remove service fuse/s carrier/s.
4) Install installation under test notice.

**Supply/Pit End**
5) Identify underground consumers mains active/s and disconnect.
6) Identify underground consumers mains neutral and disconnect.
7) Make supply active conductor/s safe.
8) Test underground consumers mains for de-energised.*
9) Bridge underground consumers mains active and neutral conductor/s.

**Installation End**
10) Test work area, fuse and meter terminals for de-energised.*

**Supply/Pit End**
12) Seal/insulate all unterminated cables ends.

**Installation End**
11) Conduct continuity test between active/s and neutral on underground consumer mains. (Less than 0.5Ω required).

**Installation End**
13) Remove metering equipment.
14) Remove fuse/s from carrier/s and refit carriers.
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4.17 Existing Installation:- Network “High” Voltage Injections

Definitions

*Network “High” Voltage Injections* – means an injection of High Voltage alternating current, Direct Current or Low Voltage alternating current to conductors not intended for those voltages. A reference anywhere in this document to HV, *HV Conductor* or *HV contact* etc, shall be read in the context of this definition.

*Distributor’s responsible officer* - means the officer appointed by the responsible Distributor for administration of the incident.

*Persons authorised by the Distributors* - means a person who holds an authorisation from the relevant Distributor to perform the work on the Distributors behalf.

1. The *Distributor’s responsible officer* confirms injection by:

   a) Confirmation of the –

      i) Network fault and effects; or
      ii) Points of contact of HV conductors with LV conductors and effects; or
      iii) Installation/s damage through customer or other person’s advice.

   Or

   An investigation of installations suspected to be affected. The investigation shall be performed by a person with an “Electrician’s” or an “Inspector’s” qualification and is authorised by the Distributor, and be of a comprehensive enough sample of installations and nature for the Distributors responsible officer to determine whether or not an injection has occurred.

2. The *Distributor’s responsible officer* determines installations to be inspected

<table>
<thead>
<tr>
<th>FAULT</th>
<th>INSTALLATIONS TO BE INSPECTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>HV and active LV conductors contact</td>
<td>Installations connected to the LV active conductor or conductors contacted by HV</td>
</tr>
<tr>
<td>HV conductor contact with the neutral LV conductor on an IMEN system.</td>
<td>Installations connected to the neutral of that transformer.</td>
</tr>
</tbody>
</table>
3. HVI Confirmed – Isolation Process

Unless otherwise determined by the Distributors responsible officer, a person authorised by the Distributor shall:

i) Isolate all installations connected to the LV conductor or conductors as identified by the investigation.

ii) Where practicable, advise customer/s of isolation and supply restoration process; and

iii) Isolate installations to be inspected from the distribution system prior to re-energisation of the distribution conductors; and

iv) Ensure precautions are taken to prevent re-energisation of each isolated installation prior to its inspection.

4. Installation inspection

Unless otherwise determined by the relevant Distributors responsible officer:

a) The inspection:

i) Shall be made by a person with an “Electrician’s” or an “Inspectors” qualification who is authorised by the Distributor; and

ii) Shall ensure the electrical integrity and safety of each installation by visual inspection and, if appropriate, testing of wiring and equipment to determine the presence and extent of any damage.
b) Inspection procedure:
   i) At each accessible installation:
      • Check and where applicable isolate alternate supplies; and
      • Turn all main switches off and isolate all circuits.
      • Inspect and, if appropriate, test for anomalies and damage of the:
         • Point of attachment;
         • Service Protection equipment;
         • Consumer mains connections;
         • Metering equipment *;
         • Main Switchboard equipment; and
         • MEN connection.

      *Note – Organisational procedures may require metering equipment subjected to a HVI to be visually inspected with the terminal covers removed, and for any damaged metering equipment to be replaced prior to energisation.

   ii) Where anomalies and/or damage that prevents safe energisation of the switchboard is identified:
      • Make safe; and
      • Advise the customer of the anomaly and/or damage, and the suggested repair and supply restoration process in accordance with the Distributors requirements.

   iii) When identified anomalies and/or damage that prevented safe energisation of the switchboard are repaired, and/or where no damage has been identified:
      • Re-energise installation;
      • Check supply to main switchboard;
      • Check for and replace malfunctioning metering equipment.
      • Re-energise circuits whilst inspecting and testing as appropriate to identify any anomalies and damage;
      • Check any identified anomaly and damage and make safe;
      • Advise the customer of the inspection result, and of any identified anomaly and/or damage, and the suggested repair process in accordance with the Distributors requirements.

   iv) Advise the relevant Distributor of each inspection result in accordance with the Distributors requirements.

Inaccessible installations:
   In accordance with the Distributors requirements
   i) Where practical, advise customer/s from site that access is required;
   ii) If unable to advise customer, leave written advice in a conspicuous location containing brief fault details and a contact number to contact the relevant Distributor to arrange access;
   iii) Leave installation de-energised;
   iv) Advise the relevant Distributor; and
   v) Perform “Inspection Procedure” when access is available
4.18 Existing Installation: UG Mains Cable Fault- Restoration of Supply

The procedure below applies for underground cable faults where installations on the circuit require the service neutral to be disconnected to allow fault finding on the mains cable (i.e. By lifting of the main neutral at the neutral link and removal of the fuse/s at individual meter positions).

Where the installations on the affected circuit do not require disconnection of the service neutral to enable identification of the fault (i.e. fault location identified without testing), refer to individual Distributors procedures for reconnection of mains cables.

*Personnel are to be aware that where the service tee neutral connection is disconnected from a mains tee joint, a polarity/NST test is to be undertaken at all installations affected by that disconnection.*

**Cable fault location to be identified by test:**

Isolate all installations on the affected circuit by undertaking the following steps:

At each individual meter position

1. Turn off the customers main switch where possible
2. Remove service/supply fuse/s
3. Test for de-energised. *
4. Identify the consumers incoming mains neutral and ensure it is disconnected and made safe.
5. Install “Installation Under Test” notice or applicable warning tape

Locate the fault and rectify

On restoration of supply to the Network LV UG cable:

At the meter position of one installation upstream of the cable fault.

1. Check main switch/es are “OFF”
2. Establish NITP *
3. Polarity Test all incoming consumer’s mains conductors. *
4. NST incoming consumer’s mains neutral. *
5. Connect consumers mains incoming neutral conductor.
6. Check Test *
7. Leave service fuse/s inserted
8. Conduct NST to NITP
9. Seal equipment

At the meter position of the remaining installations upstream of the cable fault.

1. Establish NITP *
2. Connect consumers mains incoming neutral conductor.
3. Check Test. *
4. Leave service fuse/s inserted.
5. Conduct NST to NITP.
6. Seal equipment.
**Existing Installation: UG Mains Cable Fault - Restoration of Supply….cont**

At the meter position of the most appropriate installation downstream of the cable fault. (3 phase if possible / first installation)

1. Check main switch/s are “OFF“
2. Establish NITP *
3. Polarity Test all incoming consumer’s mains conductors. *
4. NST incoming consumer’s mains neutral. *
5. Connect consumers mains incoming neutral conductor.
6. Phase Sequence Test (if applicable) **
7. Check Test *
8. Leave service fuse/s inserted
9. Conduct NST to NITP
10. Seal equipment

At the remaining installations downstream of the cable fault.

1. Establish NITP *
2. Connect consumers mains incoming neutral conductor
3. Check Test *
4. Leave service fuse/s inserted
5. Conduct NST to NITP
6. Seal equipment

* Where any installation is disconnected from a pit or pillar, standard testing is required at all installations supplied from the pit or pillar as per the individual procedures outlined in this manual or the relevant Distributor's procedure as applicable.

** As the phase sequence is unable to be confirmed prior to disconnection, a competent person is to ensure the original phase sequence is returned to the faulted circuit.

For further information refer to Section 3.9, Phase Sequence Test

Note 1 - Refer to individual Distributors procedures to ensure all installations that were disconnected have been reconnected.

Note 2 - Where non standard servicing arrangements exist at an installation, refer to individual Distributor procedures for testing requirements.

Note 3 – For cable faults on consumer’s underground cables, refer to testing as per section 4.5 and/or the individual Distributor procedures.

Note 4 – Installations affected may also include public lighting columns or frangible poles. Where a public light requires disconnection and reconnection, refer to individual procedure 4.9 or 4.10 and substitute applicable steps into the above procedure as required.